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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/243,689	02/03/1999	RICHARD M. WASSERMAN	101473	2795
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OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320				
			EXAMINER CRAIG, DWIN M	
			ART UNIT 2123	PAPER NUMBER

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/243,689

Applicant(s)

WASSERMAN, RICHARD M.

Examiner

Dwin M Craig

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3-11-05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 45-73 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 45-73 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 45-73 have been presented for Examination based on Applicant's filing of a Request for Continued Examination (RCE) under 37 C.F.R. 1.114. Claims 1-44 have been cancelled.

Response to Arguments

2. Applicant's arguments based on the 3-11-2005 responses have been fully considered. The Examiner's response is as follows.

2.1 Regarding the Applicant's response to the 35 USC § 112 rejections of claims 45-73.

Applicant has removed the term "*off-line programming*" from the claim language. The Examiner has found Applicant's response makes the earlier 35 USC § 112 rejections of the claims moot and the Examiner withdraws the earlier 35 USC § 112 rejections of the claims.

2.2 Regarding the Applicant's response to the rejection of claim 69 under 35 U.S.C. § 101 -statutory subject matter- *Ex parte Lyell*.

The Examiner notes that the Applicant has amended the claims, so that the claiming of a "*system*" and a "*method*" are no longer being claimed. The Examiner notes that this rejection is now moot in light of the instant amendments to the claims and the Examiner withdraws the rejections based on 35 U.S.C. § 101.

2.3 Regarding the Applicant's arguments regarding the 35 USC § 103 (c) rejections of claim 45.

Applicant argued (*see page 19 of the 3-11-2005 responses*)

Art Unit: 2123

"As such, the simulation system of Stevenson is only intended for designing a layout or analyzing optical vision systems, not for controlling those systems."

The Examiner has found this argument persuasive in that in order to properly teach Applicant's limitation of producing code for the control of the lens system, the code must be produced for the purpose of actual control of that optical vision system. In view of Applicant's amended claim language and arguments the Examiner withdraws the 35 USC § 103 rejection of claim 45.

2.4 An updated search, based on Applicants amended claim language has revealed new art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 2123

3. Claims 45-73 are rejected under 35 USC § 103 (c) as being unpatentable over “**Machine Vision Systems Integration in Industry**” by B.G. Batchelor and F.M. Waltz hereafter referred to as *Batchelor et al.* and U.S. Patent 5,988,862 Kacyra et al.

3.1 As regards independent Claims 45, 55, 57, 65 and 69 and using Independent Claim 45 as an example,

The *Batchelor et al.* reference clearly discloses,

“An programming system usable to generate instructions for controlling a corresponding machine vision inspection system, (page 158 ABSTRACT) the programming system comprising:

A user interface usable for programming of the corresponding machine vision system (page 160 figures 2 & 3), comprising:

An image display portion usable to display a synthetic image representation of an image acquired by the corresponding machine vision inspection system and user-alterable control elements usable to determine instructions usable to control the corresponding machine vision inspection system, the user-alterable control elements comprising at least one control element that affects focus of the synthetic image representative of an image acquired by the corresponding machine inspection system” (page 160 Step 2 Design Image Acquisition, The second step is to explore optics and lighting design and to test concepts. This is a very important task because a good-quality high-contrast image is necessary if the vision system is to extract the desired data from the background. And further down the page, Image Analyst provides tools which help the user set up and test different lighting and camera arrangements by providing on-demand picture acquisition and interactive tools which allow the user to examine the image for contrast, ensuring that the best design is selected for implementation. The Batchelor et al. reference is disclosing the functional equivalent of a “simulation system” where acquisition of a high quality image is required to develop the software.), and ...

“Generate at least one of the instructions usable in an inspection system program for controlling the corresponding machine vision inspection system to inspect at least partially on the current state of the user-alterable control elements.” (page 162 Summary).

However, the *Batchelor et al.* reference does not expressly disclose the details of manipulating a synthetic image or importing CAD data, or generating executable code to control a lens system, or manipulate a focus dependent inspection image. The *Batchelor et al.* reference

Art Unit: 2123

does disclose, (page 160, “Although a detailed discussion of optics and light is outside the scope of this paper, mention of a few considerations is in order. -- Other factors in selecting optics include size of feature to be imaged, part location uncertainty within the FOV, and physical constraints such as space restrictions for mounting camera, optics and lighting.”).

An artisan of ordinary skill would have been motivated to search the related optical art to find the required methods to integrate the code required to operate the camera optics in order to make the software fully functional.

In the same art of modeling objects for use in a visual inspection systems, the Kacyra et al. reference discloses,

An input portion for receiving CAD data representative of at least a portion of at least one object inspectable by the corresponding machine vision inspection system (Figure 1 Item 50 and Figure 39 note the “Data Exchange” module and the “CAD Data Formats” bi-directional arrow);

A hardware component simulation system, comprising:

A first portion operable to represent at least a current lens system of the corresponding machine vision inspection system, including a limited depth of field of the lens system, (Figure 6A, Figure 7A, Col. 10 lines 38-41 which read, “It (the DSP) also provides fast floating point computation capability for making geometric corrections, calibration corrections, and video lens corrections and video compression.”) and

A second portion operable to represent a current state of at least the relative position of the lens system and the portion of at least one object inspectable by the corresponding machine vision inspection system (Col. 13 lines 5-12 this section discloses that the DSP is calculating optical measurements to be certain the scanned object is in the field of focus, Figure 8A shows the object inspectable by the machine vision system item 20);

A communication interface portion connected to exchange control and data signals between the user interface and the hardware component simulation system; (Figure 2 items 230 and 40 note the term “user interface” and item 20 “scanned object”) and

A portion usable to generate the instructions for controlling the corresponding machine vision inspection system;

Wherein the programming system is operable to:

Generate a current focus-dependent synthetic image of at least the portion of at least one object inspectable by the corresponding machine vision inspection system, including focus effects

Art Unit: 2123

*related to the limited depth of field of the lens system, based on at least two current state of the user-alterable control elements, the current lens-system representation of the first portion and the current state representation of the second portion ((Col. 13 lines 5-12 this section discloses that the DSP is calculating optical measurements to be certain the scanned object is in the field of focus, **Figure 8A** shows the object inspectable by the machine vision system **item 20**);*

*Display the current focus-dependent synthetic image in the image display portion of the user interface (**Figure 15-38**);*

Thus, it would have been obvious, to one of ordinary skill in the art, at the time the invention was made, to have combined the application development methods of the *Batchelor et al.* reference with the optical and cad/image methods of the *Kacyra et al.* reference because, of the savings of labor and time and resources provided by the methods disclosed therein (*Kacyra et al.* Col. 1 lines 20-67 and Col. 2 lines 1-27).

3.2 As regards dependent **Claims 46-54, 56, 58-64, 66-68 and 70-73** the combination of the two references cited disclose the use of the user interface to program and control the camera elements and synthetic images generated for programming the machine vision inspection system.

3.3 For example, and in regards to dependent **Claims 49 and 58 (Figure 7a)** of the *Kacyra et al.* reference discloses the use of a plurality of lenses.

3.4 As regards dependent **Claim 64** the *Kacyra et al.* reference discloses an external view of an object being scanned (**Figure 15A**).

As regards the motivation to combine the teachings of the *Batchelor et al.* reference and the *Kacyra et al.* reference please see section 3.1 of this Office Action.

3.5 As regards dependent **Claim 71** the *Batchelor et al.* reference discloses taking into account lighting, (*page 160, "Although a detailed discussion of optics and light is outside*

Art Unit: 2123

the scope of this paper, mention of a few consideration is in order. -- Other factors in selecting optics include size of feature to be imaged, part location uncertainty within the FOV, and physical constraints such as space restrictions for mounting camera, optics and lighting.”).

Conclusion

4. Claims 45-73 have been presented for Examination. **Claims 45-73** have been Examined and rejected.

4.1 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Examiner has sighted numerous patents and non-patent reference(s), which disclose the state of the art of the Machine Vision Inspection Systems.

4.2 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwain M Craig whose telephone number is (571) 272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P Picard can be reached on (571)272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2123

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DMC

W. Green
Patent Examiner
TC 2100
BR 2123